Abstract of the Disclosure

A constellation mapping apparatus, which can reduce the storage capacity of a memory to one fourth by only storing constellation points in one quadrant of each constellation map rather than storing all the constellation points in each of the constellation maps, is provided. The constellation mapping apparatus includes a memory, an address generation block, a complementation logic block, and a scaling block. In the memory, constellation values in one of four quadrants of each constellation. The address generation block receives constellation point data, bits-per-symbol information, and valid symbol information indicating whether or not the bits-per-symbol information is valid, and generates address information of the memory where the constellation values corresponding to the constellation point data are stored and quadrant information indicating a quadrant where the constellation point data are placed. Based on the quadrant information for the constellation point data, the complementation logic block complements or does not complement the constellation values read from the memory following the address information. The scaling block outputs an output of the complementation logic block or a value obtained by multiplying the output of the complementation logic block by a predetermined gain obtained based on a baud rate, which indicates a speed of transmitting the bits-per-symbol information.